

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Ole Olsen et al.

Application No.: 10/563,346

Confirmation No.: 8797

Filed: June 5, 2006

Art Unit: 1797

For: FILTER

Examiner: Benjamin M. Kurtz

AMENDMENT

MS RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

INTRODUCTORY COMMENTS

In response to the Office Action mailed on April 3, 2009, Applicant hereby submits a Request for Continued Examination. Please amend the above-identified U.S. patent application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 11 of this paper.

AMENDMENTS TO THE CLAIMS

1-106 (Canceled)

107. (Previously presented) The filter according to claim 131, further comprising at least one additional sealing with a distance to said first and second sealing, and wherein said at least one additional sealing each seals one or more of the edges of said layers of first filtration medium and/or of the edges of said spacer medium and where the edges of said first filtration medium and said spacer medium located between each of said sealings are unsealed.

108. (Currently amended) The filter according to claim 131, wherein said sealings are part of or connected to an end cap and said end cap provides open spaces comprising bypass spaces between said sealings, such that contaminated liquid or filtered liquid can enter into said bypass spaces and further downstream ~~of~~ in said filter can enter into said first filtration medium or said spacer medium through the edges of said first filtration medium and/or said spacer medium.

109. (Previously presented) The filter according to claim 108, wherein said end cap further comprises perforations in an area upstream of said first sealing, such that contaminated liquid can run through said perforations before entering said first filtration medium or said spacer medium.

110. (Previously presented) The filter according claim 131, wherein said first filtration medium and said spacer medium have pores and said pores of said spacer medium are larger than said pores of said first filtration medium.

111. (Canceled)

112. (Previously presented) The filter according to claim 132, wherein said first filtration medium and/or said second filtration medium is produced by a product selected from the group of polymers, paper, plant fibres, peat, humus, plastics, wool, cotton, rock wool, cellulose, coal fibre and/or glass wool.

113. (Previously presented) The filter according to claim 132, wherein said first filtration medium and/or said second filtration medium is produced by sheets of cellulose fibres and/or polymer fibre.

114. (Previously presented) The filter according to claim 113, wherein said cellulose fibres are made hydrophobic by treatment with compounds selected from the group of wax, starch, natural resins, synthetic resins, water insoluble polyvinyl alcohol, hydroxyethyl cellulose, ethyl cellulose, carboxymethyl cellulose, polyacrylate resin, alkyd resin, polyester resin.

115. (Currently amended) The filter according to claim 132, wherein said ~~first~~ spacer medium and/or said second spacer medium is produced by a product selected from the group of

polymers, paper, plant fibres, plastics, wool, cotton, rock wool, cellulose, coal fibre, metal and/or glass wool.

116. (Previously presented) The filter according to claim 131, wherein the filter further comprises at least one perforated core.

117. (Previously presented) The filter according to claim 116, wherein the core is produced by polymer or metal.

118. (Canceled)

119. (Previously presented) The filter according to claim 116, wherein the at least one first filtration medium and the at least one spacer medium are overlying one another and spirally surrounding the central core.

120. (Previously presented) The filter according to claim 116, wherein said downstream zone of the first filtration medium form a zone adjacent to said core of at least 1 round of said first filtration medium.

121. (Currently amended) The filter according to claim 108, wherein said end cap is closed in the area of said ~~inner~~ downstream zone, and perforated in the area outside of said inner zone.

122. (Canceled)

123. (Previously presented) The filter house according to claim 135, wherein said at least one filter cartridge is at least 2 filter cartridges.

124. (Previously presented) The filter house according to claim 135, wherein said filter house comprises a container, which has at least one opening means and through which at least one opening means said filter cartridges can be changed.

125. (Previously presented) The filter house according to claim 135, wherein said filter house comprises at least one entry for contaminated liquid and at least one exit for a draining tube.

126. (Canceled)

127. (Currently amended) A method for utilizing a filter according to claim 131, said method comprising the steps of:

obtaining a liquid containing compounds and/or particles;

obtaining a filter as described in claim 131;

directing said liquid containing compounds and/or particles into said filter; and

directing said liquid through said filter and where cleaned liquid after passage of said filter exits said filter by passing said downstream zone of said filter.

128. (Previously presented) The method according to claim 127 for filtering water contaminated with one or more compounds and/or particles selected from the group of oil, sand, soil particles, bacteria, yeast, organic flocculation, dust, plant parts, ochre, humus, plant nutrient.

129. (Previously presented) The method according to claim 128 for filtering contaminated liquid within areas selected from the group of factories, sewage works, paint factories, paper factories, ships.

130. (Previously presented) The method according to claim 129 for filtering water contaminated with oil at ships.

131. (Currently amended) A filter for liquid filtration, said filter comprising:

- a plurality of layers of a first filtration medium, each layer having a filtration area and at least one edge;
- a plurality of layers of a spacer medium, each layer having a filtration area and at least one edge, wherein;
- said layers of said first filtration medium and said layers of said spacer medium are positioned alternately and with said filtration area of said layers of said first filtration medium and of said layers of said spacer medium faced towards each other;
- a downstream zone of at least one layer of said first filtration medium, said downstream zone positioned downstream in relation to said plurality of layers of said spacer medium;
- a most upstream zone of spacer medium and/or filtration medium, where a most upstream filtration area of said upstream zone being with no barrier to liquid to be filtered;

a first sealing for blocking direct entrance of liquid to be filtered into at least one edge of said downstream zone;

a second sealing positioned upstream of said first sealing and downstream of at least one layer of said first filtration medium or said spacer medium, said second sealing blocking direct entrance of liquid to be filtered into at least one edge of a layer of said first filtration medium and/or of said spacer medium;

bypass space upstream of said first sealing and/or upstream of said second sealing to allow liquid to exit and/or enter said edges of said first filtration medium and/or of said spacer medium;

wherein liquid to be filtered can enter into said filter through said filtration area of ~~the~~ a most upstream layer of said first filtration medium or of said spacer medium or through the at least one edge of said first filtration medium and/or of said spacer medium.

132. (Previously presented) The filter according to claim 110, further comprising at least one layer of a second filtration medium and/or at least one layer of a second spacer medium.

133. (Currently amended) The filter according to claim 132, wherein said at least one layer of a second filtration medium and/or at least one layer of a second spacer medium comprises a plurality of layers of said second filtration medium and/or of said second spacer medium, each layer having a filtration area and at least one edge;

wherein said plurality of layers of said second filtration medium and/or of said second spacer medium are positioned in an alternating structure with said first filtration medium and

said spacer medium with said filtration area ~~located~~ facing towards each other and/or said first filtration medium and said spacer medium are located in one zone of said filter and said second filtration medium and/or said second spacer medium are located in a more upstream zone of said filter in an alternating structure of second filtration medium and second spacer medium with the filtration area ~~located~~ facing towards each other.

134. (Previously presented) The filter according to claim 133, wherein said pores of said first filtration medium are smaller than said pores of said second filtration medium and/or said pores of said spacer medium are smaller than said pores of said second spacer medium.

135. (Currently amended) A filter house having at least one filter cartridge with a filter, said filter comprising:

a plurality of layers of a first filtration medium, each layer having a filtration area and at least one edge;

a plurality of layers of a spacer medium, each layer having a filtration area and at least one edge;

said layers of said first filtration medium and said layers of said spacer medium positioned alternately and with said filtration area of said layers of said first filtration medium and of said layers of said spacer medium faced towards each other;

a downstream zone of at least one layer of said first filtration medium, wherein said downstream zone is positioned downstream in relation to said plurality of layers of said spacer medium;

a most upstream zone of spacer medium and/or filtration medium, where a most upstream filtration area of said upstream zone being with no barrier to liquid to be filtered;

a first sealing for blocking direct entrance of liquid to be filtered into at least one edge of said downstream zone;

a second sealing positioned upstream of said first sealing, said second sealing blocking direct entrance of liquid to be filtered into at least one edge of a layer of said first filtration medium and/or of said spacer medium;

bypass space upstream of said first sealing and/or upstream of said second sealing to allow liquid to exit and/or enter said edges of said first filtration medium and/or of said spacer medium;

wherein liquid to be filtered can enter into said filter through said filtration area of a most upstream layer of said first filtration medium or said spacer medium or through the at least one edge of said first filtration medium and/or of said spacer medium.

136. (Currently amended) A method of producing a filter, the method comprising:
providing a plurality of layers of a first filtration medium with a filtration area and at least one edge;

providing a plurality of layers of a spacer medium with a filtration area and at least one edge;

organizing the layers of the first filtration medium and the layers of the spacer medium with the filtration area of the first filtration medium and the filtration area of the spacer medium facing towards each other to acquire alternate layers of the first filtration medium and the spacer

medium and with at least one layer of the first filtration medium having a downstream zone located at a most downstream part of the filter;

sealing an edge of at least the most downstream layer of the downstream zone with a first sealing, such that the first sealing blocks direct entrance of liquid to be filtered into the edge of the first filtration medium of the downstream zone,

sealing at least the edge of one layer of the first filtration medium and/or of the spacer medium with a second sealing in a position upstream of the first sealing and hereby obtaining a filter;

providing bypass space upstream of said first sealing and/or upstream of said second sealing to allow liquid to exit and/or enter said edges of said first filtration medium and/or of said spacer medium; and

not providing the filter with a liquid impermeable layer around the filtration area of the layers of the first filtration medium and the layers of the spacer medium.

137. (Canceled)

REMARKS

Claims 107-110, 112-117, 119-121, 123-125 and 127-137 were at issue in the present Office Action. The present amendment cancels claim 137. As such, it is claims 107-110, 112-117, 119-121, 123-125 and 127-136 which are at issue.

The Rejection

In the Office Action mailed on April 3, 2009, claims 107, 108, 110, 112, 113, 115-117, 119, 120, 125, 131-134, 135 and 136 were rejected under 35 U.S.C. §102(b) as being anticipated by Hunter (US 2,537,897; hereafter Hunter '897). Claims 109 and 121 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hunter '897 and Hunter et al. (US 2,537,898). Claim 123 was rejected under 35 U.S.C. §103(a) as being unpatentable over Hunter '897. Claim 114 was rejected under 35 U.S.C. §103(a) as being unpatentable over Hunter '897 in view of Novak (US 5,744,406). And finally, claim 124 was rejected under 35 U.S.C. §103(a) as being unpatentable over Hunter '897 in view of Boogay (US 4,299,699).

In addition to the foregoing, claims 107-110, 112-117, 119-121 and 127-134 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Support for Amendment to the Claims

Support for amendments to claims 131, 135 and 136 is provided in Figure 3; page 32, lines 17-19; page 43, lines 8-10; page 14, lines 14-19; and page 15, lines 18-28. As such, Applicant respectfully submits that no new matter has been added to the application.

**Remarks Directed to the Rejection of Claims 107-110,
112-117, 119-121 and 127-134 under 35 U.S.C. §112, Second Paragraph**

The above-cited claims have been amended in order to provide sufficient antecedent basis for the limitations thereof. In addition, the claims have been amended such that it is clear how the liquid is filtered through the filter. As such, Applicant submits that these claims no longer fail to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Therefore, Applicant requests that the rejection of these claims under 35 U.S.C. §112, second paragraph, be withdrawn and the claims moved towards allowance.

**Remarks Directed to the Rejection of Claims 107, 108, 110, 112,
113, 115-117, 119, 120, 125, 131-134, 135 and 136 under 35 U.S.C. §102(b)**

The present invention is directed to a filter with alternating layers of filtration medium and spacer medium. At the edges of the filtration medium and spacer medium, bypass spaces are located to allow liquid to circumvent part of the filter. No shell is surrounding the downstream sides of the filter in the region of the filtration areas of the filtration medium and spacer medium. The construction of the filter reduces the risk of clotting the filter and increases the life length of the filter, as the amount of filtration medium that actually can be used for filtration is increased due to increased possibility for the liquid to pass the filter.

Hunter '897 (US 2,537,897) describes a cylindrical filter with rolled, alternating layers of filtering material and spacer material. At the end of the cylindrical filter, end closure caps or walls (4) prevent the entrance of liquid into the filter. A casing wall (6) encloses the side of the cylindrical filter. Inlet openings (7) of the casing wall constitute openings of dispersion openings or channels (15) in the roll.

The amended claim 131 specifies that the filter of the invention of the present patent application has a most upstream zone of spacer medium and/or filtration medium, where a most

upstream filtration area of said upstream zone is with no barrier to liquid to be filtered and that bypass space upstream of said first sealing and/or upstream of said second sealing allows liquid to exit and/or enter said edges of said first filtration medium and/or of said spacer medium.

Amended claim 131 is novel in respect of Hunter '897.

In Hunter '897 it is described that the side wall or shell (6) is to be part of the filter:

Rim portions 5 of the end walls telescope and are secured to margins of an outer protective side wall or shell, (e.g. sheet metal), 6.

(Column 3, lines 16-19).

The importance of the shell is also understood from:

Principally in order to facilitate assembly into the shell 6, the body or roll 10 may have a binder and/or "scuff" layer 13 of one or more layers of any appropriately strong and preferably pliable, material such as craft paper applied thereover and secured to itself as by adhesive, so that the size of the roll is maintained and its surface protected for easy insertion into the shell 6, or the shell 6 may be formed as just described to serve as the outside wrapping for the filter material.

(Column 3, line 63-72).

From the latter quotation it is understood from "in order to facilitate assembly into the shell" that a shell is indeed a feature of the invention.

The side wall or shell is thus described as an existing feature of the filter, not as an optional feature. Thus the filter described in amended claim 131 differs from the filter described in Hunter '897 as the filter of amended claim 131 does not have any side wall or shell surrounding the filtration material in the form of filtration medium and spacer medium.

In Hunter '897 it is described that edges of the rolled filter material are closed to avoid liquid to enter into the filtration material from this part:

..., then to provide a casing around said body sealing its ends axially of the roll so that the raw filtrate cannot by-pass the filter body, as from one layer to the next, ...

(Column 1, line 53 – column 2, line 1).

The importance that the filtrate is not to bypass the layers for filtration material is repeated in:

Sealing material such as water and oil repellent adhesive 14 (e.g. water and oil repellent synthetic resin of any appropriate type or class) is applied by brushing, dipping, spraying or otherwise, to the ends of the roll or body 10, so that the filtrate cannot by-pass the filtration surfaces and escape to the outlet openings 2 between the filter body and the end closure 4.

(Column 3, line 73 – column 4, line 5).

The corrugated form of the end cap is not used to obtain bypass space between the edges of the filter material and the end cap. The corrugations are used to press the edges of the filtering material together to prevent the passage of liquid between the edges of the filtering material and the end cap:

The ends of the tubular filter body 12 formed as explained above can also be sealed by axial and/or radial compression of the end portions only of the body, see concentric ribs or corrugations 20 and 21 in a typical end cap 4a, Fig. 5, until the foramina in the sheet stock are substantially closed against passage of the filtrate therethrough, or at least contaminating particles suspended by the filtrate.

In Hunter '897 it is thus clearly described that the liquid is not to bypass filtering material by entering a bypass space located between the edges of the filtration material and the end cap. Hunter '897 rather secure that the ends of the filtration material is closed to prevent the liquid to circumvent the layers of filtration material. Therefore the invention as described in amended

claim 131 differs from the invention described in Hunter '897 as the invention of the present application has bypass space.

Claims 135 and 136 are amended to include similar features as incorporated into claim 131. Thus claims 135 and 136 are also novel in respect of Hunter '897.

With the independent claims 131, 135 and 136 being novel, also the depending claims 107, 108, 110, 132-134, 112, 113, 115-117, 119, as well as claim 125, are novel over Hunter '897.

**Remarks Directed to the Rejection of
Claims 109, 121, 123, 114 and 124 under 35 U.S.C. §103(a)**

Claims 109 and 121

Hunter '897 is described above.

Hunter '898 (US 2,537,898) describes a cylindrical filter with rolled, alternating layers of filtering material and spacer material. At the end of the cylindrical filter end closure caps prevent the entrance of liquid into the inner part of the filter, whereas the outer part of the end caps are perforated to provide inlet openings leading to filtrate introduction and distribution chambers. A casing wall (6) encloses the side of the cylindrical filter.

As described by Hunter '897, also Hunter '898 describes a filter with an impermeable side wall:

The caps are preferably sheet metal suitably joined to the tube 2 or to an outer scuff shell or cover 5 of imperforate metal or tough paper.

(Column 2, lines 7-10).

In the Figure the scuff shell or cover is also shown.

From the description of Hunter '897 of the entrance of the liquid into the filter, it is also understood that an impermeable side wall is located around the filtration material:

Equal pressure maintained in the two chambers 11 causes the raw filtrate to penetrate the primary filter body P deeply between its sheets.

(Column 2, lines 40-41).

The pressure must also be performed to the outside of the filter, e.g. to the side wall, thus if no side wall was present the liquid would also enter into the filtration area of the filtration material. This is not described by Hunter '897 and is not indicated in the Figure. Therefore the filter has a side wall.

Hunter '898 therefore does not describe a filter without an impermeable side wall surrounding the filtration medium.

Hunter '897 and Hunter '898 both describe a filter with an impermeable side wall surrounding the filtration medium. The combination of Hunter '897 and Hunter '898 therefore does not result in a filter without an impermeable side wall surrounding the filtration medium.

Claim 109 and 121 are both dependent claims of claim 108, which by itself is dependent on claim 131. Amended claim 131 of the present patent application describes a filter without an impermeable side wall surrounding the filtration medium. This feature is not obtained when combining Hunter '897 and Hunter '898, thus claims 109 and 121, even though directed to perforations of the end cap, are non-obvious in respect of the combination of the teaching of Hunter '897 and Hunter '898.

Claim 123

Claim 123 is directed to a filter house with at least two filter cartridges. Claim 123 is dependent on claim 135.

As described above, amended claim 135 comprises the features of amended claim 131.

The feature of no impermeable side wall surrounding the filtration medium is not included in Hunter '897. As this feature is included in claim 135, claim 123 is non-obvious in respect of Hunter '897.

Claim 114

Claim 114 is directed to cellulose fibres of the filter, where the fibres are made hydrophobic.

Novak (US 5,744,406) describes a fabric article treated for use in absorbing fats, oils and greases. Novak does not describe a filter with alternating layers of filtration medium and spacer medium.

Claim 114 is dependent on claim 131 although not directly dependent on this claim. As described above, amended claim 131 is directed to a filter without an impermeable side wall surrounding the filtration medium.

When combining Hunter '897 and Novak, the feature of no impermeable side wall surrounding the filtration medium of a filter is not to be found in the two documents. Hereby the features of claim 114 are not disclosed by the combination of Hunter '897 and Novak. Thus claim 114 is non-obvious.

Claim 124

Claim 124 is directed to a container with the filter. The container has at least one opening means and through which at least one opening means the filter can be changed.

Claim 124 is dependent on claim 135.

As described above, Hunter '897 does not describe bypass space beneath the end cap. Furthermore Hunter '897 does not describe a filter without an impermeable side wall surrounding the filtration medium.

Boogay (US 4,299,699) describes a filter with a cylindrical assembly of yarn segments that can be tightened in a helical fashion to perform as filtration/coalescing media.

First of all, a person having ordinarily skill in the art would not combine the documents of Hunter '897 and Boogay, as the filtration material of Hunter '897 is layers of filtering material and the filtration material of Boogay is yarn segments. Hereby the different filtering materials place different demand to the feature of the rest of the filter. These features are not compatible, e.g. in Boogay the cylindrical assembly of yarn segments can be tightened in a helical fashion to perform as filtration/coalescing medium. Thus if the yarn segments are used in the filter described by Hunter '897 where no helical tightening is described, the filtration will be improper due to loose yarn segments.

If combining Hunter '897 and Boogay, the bypass space of amended claim 135 is not described. Thus claim 124 being dependent on claim 135 is non-obvious.

Conclusion

Applicant submits that all of the pending claims are in allowable form. If the Examiner has any suggestions, comments, etc. that would put the claims in better form for allowance, the Examiner is requested to contact the undersigned attorney.

The Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 07-1180.

Dated: 06/29/2009

Respectfully submitted,

By: /Mark A. Harper, Ph.D./

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